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School-Based Assessment Research in Lebanon

Abstract

Initially, descriptions of the recent history of Lebanon and the Lebanese systems of education are presented. Attention is subsequently focused on school-based assessment research involving cognitive, achievement, and personality testing. Attention is also afforded to research involving contextual factors that relate to the assessment process. Recommendations for additional research are proposed and the feasibility of these recommendations is discussed vis-a-vis *the prevailing situation.*

Résumé

L'auteur commence par donner une description de l'histoire récente du Liban et des systèmes d'éducation libanais. Il s'attache ensuite aux recherches sur l'évaluation en milieu scolaire, notamment sur les tests cognitifs, les tests de niveau et de personnalité. Il s'intéresse également aux recherches sur les facteurs contextuels qui ont trait au processus d'évaluation. Il recommande des recherches plus poussées et analyse la faisabilité de ces recommandations par rapport à la situation qui prédomine.

Recent History

Lebanon, the home of the ancient Phoenicians, became part of the Ottoman empire in the sixteenth century (Hitti, 1970). During the First World War, British and French forces invaded the area and expelled the Ottomans (Salibi, 1977). The country was subsequently administered by France under a League of Nations mandate from 1920 through 1941. A republic was

formally declared in 1941. At that time, the Lebanese Christian and Moslem communities agreed on a delicate balance of political power. The unwritten covenant provided for a distribution of legislative authority in a ratio of 6 Christians to 5 Moslems (Salibi, 1977). It was also formally concluded that the President of the Republic must be a Maronite Christian, the Prime Minister a Sunni Moslem, and the Speaker of the House a Shi'a Moslem (Europa Year Book, 1989).

This agreement was successful for a number of years and Lebanon prospered in an atmosphere of pluralistic harmony. However, with the establishment of Israel in 1948, thousands of Palestinian refugees (mostly Sunni Moslems) received asylum in Lebanon. These refugees coupled with the indigenous Moslem population's greater birth rate served to disturb the delicate balance between the country's religious communities. Under increased pressure from its Moslem community and the Palestinian Liberation Organization (PLO), the Lebanese government allowed the PLO to maintain its headquarters in Beirut and to initiate attacks against Israel through south Lebanon. This situation led to friction between Lebanon's Christians and the PLO. In 1974, the Christian Phalange party and the PLO openly clashed. The fighting rapidly escalated with Lebanon's Moslems openly siding with the PLO. Full scale warfare quickly enveloped the country and the Lebanese government collapsed in 1975. The Arab League subsequently convened and dispatched a 30,000-Arab Deterrent Force (ADF) to quell the hostilities. Although the ADF was able to temporarily contain the hostilities, it did not disarm the PLO or the various Lebanese militias. Since that time the country has, in effect, been partitioned along religious lines.

Continued hostilities against Israel by the PLO were associated with a large scale Israeli invasion in 1982. Although this action prompted the temporary withdrawal of Syrian and Palestinian troops from West Beirut and South Lebanon, these effects were ephemeral as Syrian and Palestinian units returned to their former positions in 1986. Since that time, Syria has assumed an increasingly confrontative role against Lebanon's Christians. In March of 1989, General Aoun, the Christian commander of the Lebanese army, closed the illegal ports that were being used to smuggle narcotics from the country. This action prompted Syria and its Moslem allies to shell the Christian enclave. Christian forces responded in kind, and six months of indiscriminate bombardment led to an evacuation of most of the capital's inhabitants. As this article goes to press, a cease-fire prevails and Lebanese legislatures have revised their constitution. (The new covenant calls for an equal distribution of legislative authority between Lebanese Christians and Moslems.) The agreement does not, however, call for the withdrawal of Syrian forces and

General Aoun has refused to honour any agreement that does not provide for a Syrian withdrawal.

System of Education

The official Lebanese curriculum was formulated according to the French model. Viewed along these lines, the first nine years of schooling offer a common curriculum for all students. By the age of 16 Lebanese students must decide if they want to pursue a literary or scientific major. As students cannot transfer high school marks and as Lebanese universities do not permit students to major in disciplines that are incongruent with their academic records, this decision is quite portentous. Following high school graduation, students may apply to a number of Lebanese universities (e.g., The American University of Beirut [AUB], Beirut University College, or the Université Saint Joseph). It should be noted in this context that two major universities train educators and psychologists in Lebanon: The American University of Beirut and the Université Saint Joseph. The former is a private institution that is largely subsidized by the American government, whereas the latter is a private institution that is subsidized by France and administered by Jesuits. Although *force majeure* precluded the collection of up-to-date educational statistics, it was estimated that 178,164 students enrolled during the 1984-1985 academic year (Europa Year Book, 1989). This figure is indicative of approximately 26.14% of the Lebanese population.

School-Based Assessment Research

Although the ongoing hostilities have drastically reduced research productivity, a considerable amount of applied and theoretical research has taken place. Given that school-based assessment research is a relatively orthogonal process, this paper will not review the research contributions that emanated in the fields of developmental (Diab & Prothro, 1957), social (Melikian & Prothro, 1955), experimental (Keehn, 1959; Walker, 1986), abnormal (Saigh, 1988), or clinical (Day & Sadek, 1982; Saigh, 1987) psychology. Attention will, however, be focussed on the research that has involved cognitive, achievement, and personality testing.

Cognitive tests

Two measures of mental ability were expressly developed for Lebanese students. Initially, Saigh (1984) constructed the *Lebanese Intelligence Scale for Adults* (LISA). The LISA presents a series of items relating to general knowledge, mathematics, analogies, logic, and schematic reasoning.

Figure 1 presents a selected sample of the aforementioned items. LISA test-retest reliability coefficients have ranged from .84 ($p<.01$) to .90 ($p<.01$) and moderate coefficients have been observed when LISA scores were correlated with secondary school semester grades in Arabic ($r = .45$, $p<.01$), civics ($r = .50$, $p<.01$), English ($r = .48$, $p<.01$), and mathematics ($r = .43$, $p<.01$) (Saigh, 1984).

Figure 1
Selected items from the Lebanese Intelligence Scale for Adults

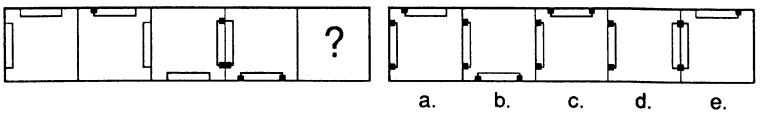
15. The ancient temples of Balbeck were constructed under the rule of the

    a. Phoenicians b. Persians c. Romans
    d. Greeks e. Egyptians

20. Samir must come from Womba because he has a red beard. This statement is logical if it is true that

    a. All adult Wombas have red beards
    b. Few men aside from Wombas have red beards
    c. All Wombas have red beards
    d. Only Wombas have red beards
    e. Red beards are traditional in Womba

34. The designs in the first box are arranged in a special way. Identify the design from the second row that belongs where you see the question mark.



39. Antibiotic is to disease as

    a. nurse is to doctor b. microbe is to infection
    c. dark is to light d. vaccine is to typhoid
    e. water is to drought

41. In a group of 30 people, 12 individuals traveled on the steamship Esperia and 10 people traveled aboard the steamship El Greco. Eight people at one time or another traveled on both ships. How many people out of the original 30 have not traveled on either ship?

    a. 30 b. 24 c. 22 d. 16 e. 20

The *Lebanese General Ability Scale* (LGAS) (Saigh, 1986a) was developed in order to facilitate the selection of university scholarship applicants. The instrument was constructed with the view that subjective environmental experiences may prevent otherwise able applicants from succeeding on curriculum-based admission tests. As such, the LGAS provides items that involve analogies, logic, numerical concepts, and schematic reasoning. Figure 2 provides examples of the aforementioned items.

Figure 2
Selected items from the Lebanese General Ability Scale

1. The numbers are arranged according to a certain rule. Identify the missing number.

11	3	9
4	6	4
44	18	?

a. 44 b. 1 c. 36 d. 38

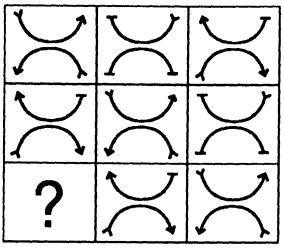
2. Algebra is to mathematics as

a. logic is to philosophy
b. economics is to money
c. geometry is to triangle
d. experiment is to psychology

3. If Mahmoud eats twice as much as Yousef, who eats one-third as much as Ibrahim, who eats twice as much as Adel, who eats the most?

a. Adel b. Mahmoud c. Yousef d. Ibrahim

4. The designs are arranged according to a certain pattern. Identify the missing figure.



Three alternate forms of the LGAS are available in Arabic. Each form is associated with a good deal of internal consistency (i.e., Kuder-Richardson formula 21 coefficients have ranged from .84 [p<.01] to .90 [p<.01]). Moderate coefficients were also observed when LGAS scores were correlated with undergraduate semester grades in organic chemistry (r = .45, p<.01), English (r = .32, p<.05), algebra (r = .55, p<.01), and architecture (r = .69, p<.01).

Examined from a cross-validational perspective, Subheyha (1983) administered Form R *Otis Lennon School Ability Test* (OLSAT) (Otis & Lennon, 1979) to 185 secondary school students whose ages ranged from 15 to 18 years. A test-retest procedure over a four-week interval evidenced a high degree of reliability (r = .86, p<.01). Subheyha also tested the alternate form reliability of the OLSAT by administering Forms R and S to the subject pool. He subsequently observed a coefficient of .76 (p<.01). OLSAT Form R scores were also correlated with semester grades in English (r = .55, p<.01), algebra (r = .40, p<.01), geometry (r = .35, p<.01), physics (r = .55, p<.01), chemistry (r = .46, p<.01), and social studies (r = .23, p<.05).

Achievement tests

The *English Entrance Exam* (EEE) (Miller, 1970) is the most frequently used achievement test in Lebanon. The EEE consists of 200 multiple-choice items involving English grammar, vocabulary, spelling, and comprehension. Test items are furnished by the faculty of the AUB's English Department and test development specialists from that university's Office of Tests and Measurements. The EEE appears in several alternate forms that are revised and up-dated on a yearly basis. The internal consistency of the EEE was established through the calculation of a series of Kuder-Richardson formula 21 coefficients. Viewed in this context, coefficients have ranged from .94 (p<.01) to .90 (p<.01) (Miller, 1970). Miller (1978) also established the test-retest reliability of the EEE by administering the instrument to 745 undergraduates and observing a coefficient of .79 (p<.01). The EEE presents moderate predictive validity given that coefficients of .54 (p<.01), .61 (p<.01), and .57 (p<.01) were observed when scores correlated with the first year GPA's of AUB undergraduates who were enrolled in the Faculties of Arts and Sciences, Engineering, and Agriculture. In light of these qualities, the AUB and Beirut University College rely on EEE scores as an integral part of their admission criteria.

The *Scientific Quarterly* (SQ) (Miller, 1980) has also enjoyed considerable utility in Lebanon. As in the case of the EEE, test items are prepared

by the faculty of the AUB's Departments of Biology, Chemistry, Mathematics, and Physics as well as specialists from the AUB's Office of Tests and Measurements. Miller (1980) observed Kuder-Richardson formula 21 coefficients of .91 ($p<.01$) and .94 ($p<.01$) with alternate forms of the test. SQ scores have also been moderately associated with undergraduate marks in biology ($r = .42$, $p<.01$), chemistry ($r = .45$, $p<.01$), mathematics ($r = .48$, $p<.01$), and physics ($r = .42$, $p<.01$).

Although a good deal of effort has been afforded to the development of endemic measures of achievement, less work has been ascribed to cross-validational studies. Moreover, the modicum of research in this area has produced rather unsatisfactory validity estimates. Viewed along these lines, Saigh and Khairallah (1984) attempted to cross-validate the *Diagnostic Analysis of Reading Errors* (DARE) (Gillespie & Shohet, 1979). According to the test manual, the DARE was developed in order to identify adolescents and adults with language-related learning disabilities and to provide diagnostic information about the nature of their disability. In so doing, the DARE provides an overall composite of the degree of impairment as well as subtests to identify specific error patterns that involve sound substitution, omission, and letter-sequence reversals. With these points in mind, Saigh and Khairallah administered the DARE to 40 post-secondary school students who were enrolled in an extensive English preparatory course and 79 secondary school students. Flanagan's (1937) formula was used to calculate the reliability of the test and coefficients of .60 ($p<.01$) and .65 ($p<.01$) were observed on the basis of composite scores of the two groups. The EEE scores of the post-secondary school students and the semester English grades of the secondary school students were correlated and coefficients of .31 ($p<.05$) and .32 ($p<.05$) were noted. Inverse associations were observed with the DARE substitutions ($r = -.27$, $p<.04$), omissions ($r = -.8$, $p>.05$), and reversals ($r = -.18$, $p>.05$) subtest when correlated with EEE scores. In a similar vein, these subtests were inversely associated ($r = -18$, $p<.05$; $r = -.26$, $p<.05$; and, $r = -.21$, $p<.05$) with the English grades of the secondary school students. Saigh and Khairallah went on to suggest that these coefficients were indicative of the limited correspondence between the measures that were correlated. More specifically, it was indicated that the EEE and English semester grades consisted of test items involving English grammar, vocabulary, reading comprehension, and spelling whereas the DARE is made up of a 46-item spelling list.

Personality tests

Due to the importance that Lebanese parents and educators ascribe to scholastic achievement, high levels of test anxiety are frequently reported (cf. Saigh & Antoun, 1984). In light of the adverse effects of test anxiety and the

need to derive valid diagnostic and treatment outcome measures, two investigations were directed toward the cross-validation of self-report test anxiety inventories. Initially, Saigh and Mukallid (1983) administered the *Suinn Test Anxiety Behavior Scales* (STABS) (Suinn, 1979) to 192 English-speaking secondary school students. A test-retest reliability procedure yielded a coefficient of .89 ($p<.01$). Pearson product-moment correlations were calculated on the basis of the students' STABS scores and their semester grades in Arabic ($r = -.09$, $p>.05$), chemistry ($r = -.15$, $p>.05$), English ($r = -.06$, $p>.05$), geography ($r = -.06$, $p>.05$), mathematics ($r = -.09$, $p>.05$), and physics ($r = -.09$, $p>.05$). Given the apparent limited predictive power, and as more robust coefficients were reported in the West (cf. Suinn, 1979), Saigh and Mukallid conducted a series of *post hoc* interviews. It was subsequently determined that more than half of the selected subjects deliberately falsified their scores because they felt that their actual level of anxiety would augur against their university admission. In view of this, Saigh (1986b) administered the STABS to a similar sample (with the assurance that their scores would be kept in the strictest confidence) and moderate inverse correlations were observed between the STABS estimates and semester grades in chemistry ($r = -.41$, $p<.01$), English ($r = -.44$, $p< .01$), and mathematics ($r = -.40$, $p<.01$).

Saigh and Khuri (1983) subsequently translated the *Mathematics Anxiety Rating Scale for Adolescents* (MARS-A) (Suinn & Richardson, 1972) to Arabic. The cross-language equivalence of the translation was addressed by administering the Arabic and English MARS-A to two bilingual twelfth-grade classes according to a counterbalanced design. Correlational coefficients of .85 ($p<.01$) and .91 ($p<.01$) were noted. In an effort to avoid the problems that were encountered with the STABS, the school principal met with the subjects (133 Lebanese adolescents) and urged them to respond in a candid way with the understanding that their scores would remain in confidence. The Arabic MARS-A was subsequently administered and moderate inverse coefficients were observed between the students' mathematic anxiety scores and their semester grades in chemistry ($r = -.31$, $p<.01$), mathematics ($r = -.56$, $p<.01$), and physics ($r = -.30$, $p<.01$).

Given that all sectors of society have been affected by the war, a number of investigations have cross-validated or developed stress-related measures. Mathia (1982), for example, translated Wolpe and Lang's (1964) *Fear Survey Schedule* (FSS) to Arabic and administered the translation to 300 students. Cronbach *alpha* coefficients were reported in the range of .91 ($p<.01$) to .94 ($p<.01$) and FSS scores were moderately associated ($r = -.43$, $p<.01$) with clinically derived anxiety estimates.

In a similar vein, Saigh (1982a) translated the *State-Trait Anxiety Inventory* (STAI) (Spielberger, Gorsuch, & Luschane, 1968) to Arabic and administered the Arabic and English versions to 50 bilingual undergraduates according to a counter-balanced design. As coefficients of .90 ($p<.01$) and .85 ($p<.01$) spoke well for the cross-language equivalence to the Arabic STAI, Saigh went on to administer the Arabic translation to 128 undergraduates on two occasions over a five-day interval. Test-retest coefficients of .74 ($p<.01$) and .81 ($p<.01$) were observed for the state and trait scales. The state and trait scales were also moderately associated ($r = .51$, $p<.01$ and $r = .62$, $p<.01$) with FSS scores. Although the Lebanese psychometric properties of the FSS and STAI were satisfactory, it became apparent that these measures could not directly assess situationally specific fears that were indicative of the Lebanese crisis. In view of this, Saigh (1982b) developed the *Lebanese Fear Inventory* (LFI). In so doing, the incidence and type of war-related fear reactions that were observed over a two year interval at a counselling clinic were combined and a 15-item Likert-type inventory was constructed on a proportional basis to the observed frequencies. Table 1 (page 74) presents a representative sample of the LFI items.

The LFI was administered to 206 outpatients with a wide range of somatic disorders; a Cronbach *alpha* coefficient of .89 ($p<.01$) was noted. LFI scores were also moderately associated ($r = .62$, $p<.05$) with psychiatric ratings of war-related fears.

In an effort to establish a valid treatment-outcome assessment package for Lebanese children, Saigh (1986c) translated the *Revised Children's Manifest Anxiety Scale* (RCMAS) (Reynolds & Richmond, 1978), *Children's Depression Inventory* (CDI) (Kovacs, 1978), and the *Conners Teacher Rating Scales* (CTRS) (Conners, 1969) to Arabic. The English and Arabic versions of the RCMAS and CDI were administered to a sample of bilingual children; coefficients of .82 ($p<.01$) and .80 ($p<.01$) were noted. A bilingual sample of teachers also marked the Arabic and English version of the CTRS versions; a coefficient of .89 ($p<.01$) was observed. Saigh went on to administer the RCMAS and CDI to 691 children. The teachers of the selected sample also rated the students' accuracy according to the CTRS criteria. The large scale test administration yielded Cronbach *alpha* coefficients of .89, .92, and .92 for the RCMAS, CDI, and CTRS, respectively. The construct validity of the battery was established (Saigh, 1989a) by comparing the scores of three groups of subjects whose scores should have differed as a function of their psychiatric morbidity. The first group consisted of 231 children with posttraumatic stress disorder (PTSD), the second group consisted of 32 test phobia cases, and the third group was made up of 35

Table 1

Selected items from the Lebanese Fear Inventory

Directions: The items in this inventory reflect themes or experiences that may cause fear or unpleasant associations. Estimate the degree to which each of the following items disturbs you by placing a check mark (√) in the appropriate column:

	Level of Disturbance				
Item	**Not at all**	**A little**	**A fair amount**	**Much**	**Very much**
3. Being asked to produce your identification card by an armed man	( )	( )	( )	( )	( )
4. Explosions	( )	( )	( )	( )	( )
6. Crossing from the "Christian" to the "Moslem" side of Beirut or *vice versa*	( )	( )	( )	( )	( )
8. Being kidnapped	( )	( )	( )	( )	( )
12. Snipers	( )	( )	( )	( )	( )
14. Discussing politics with a stranger	( )	( )	( )	( )	( )

nonclinical controls. As expected, the PTSD cases evinced significantly higher RCMAS, CDI, and CTRS scores than their phobic and nonphobic peers.

In a similar vein, Spielberger's (1973) *State-Trait Anxiety Inventory for Children* was translated to Arabic (Day, Knight, Nakadi, & Spielberger, 1986). The investigators administered the Arabic inventory to 266 children; test-retest coefficients of .60 ($p<.01$) and .67 ($p<.01$) were observed for the state and trait scales. In terms of construct validity, Day *et al.* (1986) determined that orphans presented higher state and trait scores than nonorphans.

Test-related contextual variables

Given that test-related contextual variables may contribute to error variance (Barber, 1976), a number of studies have addressed this concern. Saigh (1979), for example, argued that religious affiliations may have a direct bearing on test performance. In order to test this hypothesis, two intellectually matched groups of Lebanese Christian and Moslem school children were randomly assigned to one of three treatment groups. The first group was tested by a male examiner who wore a 3.5 cm by 4.5 cm gold crucifix about his neck, and the second group was tested by the same examiner as he wore a 3.5 cm by 4.5 cm gold symbol of the Koran. The third group was tested in the absence of religious symbols. Data analysis revealed that the *Wechsler Intelligence Scale for Children - Revised* (WISC-R) Digit Span scores varied as a function of the correspondence between the examinee's religion and the symbols that were worn. More specifically, the scores of Christians and Moslems significantly exceeded the scores of their peers when they were tested by an examiner who wore a symbol that was commensurate with their affiliation. Moreover, a reverse effect was observed when the subjects were examined when a symbol of a different religion was worn. It was subsequently indicated that the region's history of religious strife, in addition to the prevailing crisis, should be viewed as major determinants of the performance that was observed. More specifically, Saigh suggested that the religious symbols may have served to augment or reduce anxiety and that these variations were evinced through divergent scores.

In a similar vein, Saigh (1981) tested the assertion that the Lebanese assign precise and meaningful connotations to gestural language (Brewer, 1951). In so doing, 40 undergraduates were randomly assigned to one of two treatment conditions. Both groups went on to receive an administration of the Similarities and Digit Span subtests of the *Wechsler Adult Intelligence Scale* (WAIS). The students in the experimental condition were tested by an examiner who leaned forward in an attentive posture, established eye contact as the questions were presented, and simultaneously smiled and nodded after each response. On the other hand, the control group received neutral nonevaluative examiner feedback. In this case the examiner consistently leaned back and looked down at the WAIS manual as he questioned each subject. The examiner also maintained a bland facial expression throughout the assessment. Data analysis determined that the WAIS Similarities and Digit Span scaled scores of the experimental subjects significantly exceeded the scores on the controls. Saigh went on to suggest that the regularity of the experimental procedure and the close association between the examinee's responses and the examiner's nonverbal behaviour may have reinforced the

subject's efforts and this may have been reflected through enhanced performance. By the same token, it was also suggested that the noncommittal behaviour of the examiner in the face of increasingly more difficult questions may have induced anxiety and affected the performance of the controls.

Examined from a more operant perspective, Saigh (1985) observed that classroom testing is generally indicative of fixed-interval (i.e., announced and prearranged) or variable-interval (i.e., unannounced and unscheduled) schedules of reinforcement. In an effort to assess the effects of these schedules, two matched groups of undergraduates were selected from two learning and human development classes. The experimental subjects were told that they were going to receive a series of unscheduled assessments over a five-week interval and that their grades on these quizzes would reflect 20% of their semester grade. On the other hand, the controls were told that they were scheduled to receive a series of quizzes that would constitute 20% of their semester grade and that these quizzes were going to be administered on five consecutive Fridays. The fixed and variable regimens were subsequently effected. Pursuant to this, the subjects marked the STABS and a course evaluation questionnaire. Data analysis revealed that the experimental subjects were significantly more test anxious and dissatisfied with the course and the instructor. On the other hand, the quiz averages of the experimental and control groups were not significantly different. In view of these points, the social validity (Wolf, 1978) of variable-interval assessment regimens was challenged.

Recommendations

Examined *in toto*, it is apparent that a number of school-based intelligence, achievement, and personality tests have been developed. Although the majority of these measures evince adequate psychometric properties, additional research is in order. It should be observed in this context that the group intelligence tests that have been developed or cross-validated yield singular quotients and that these quotients are not well-suited for establishing specific school-related diagnoses (e.g., developmental reading disorder). In view of this and as measures like the LISA and LGAS present heterogeneous item pools, researchers should factor analyze these instruments and establish the validity of the ensuing factors *vis-a-vis* school grades. It is also recommended that research should be directed toward the development of multifaceted, individually-administered intelligence scales.

Viewed from the standpoint of achievement testing, it is important to note that well-validated tests like the EEE or SQ are not appropriate for

assessing elementary or junior high school students. As such, research should be directed toward the development of endemic norm-referenced measures that are indicative of the Lebanese curriculum. Research should also be directed toward the cross-validation of extant measures (e.g., the *Stanford Diagnostic Mathematics Test*, [Beatty, Madden, Gardner, & Karlsen, 1986]) inasmuch as a number of these measures appear to offer a good deal of content validity.

Given that all sectors of Lebanon's society have been affected by the war, it is not surprising to observe that a number of stress-related tests have been developed or cross-validated. Although the majority of these tests have yielded adequate reliability and validity coefficients, these tests are not suitable for formulating discrete psychiatric diagnoses (e.g., posttraumatic stress disorder). In view of this and the prevalence of childhood and adolescent psychiatric cases with war-related etiologies, it is incumbent on researchers to cross-validate structured clinical interviews (e.g., the Structured Clinical Interview for the DSM-III-R, [Spitzer, Williams, & Gibbon, 1987]) that are intended to provide psychiatric diagnoses.

Future Directions

As one might expect, the war in Lebanon has had a negative impact on all sectors of society. In terms of human suffering, Halande (1986) conservatively estimated that 100,000 people have been killed and that 860,000 were compelled to emigrate. Given an estimated pre-war population of 3,000,000, these estimates are especially daunting. Lebanon, once the "Switzerland of the Middle East," has been pummeled by the flight of capital, loss of tourism, and currency devaluations. Moreover, foreign and well-qualified Lebanese university faculty have left the country pursuant to the abduction or assassination of a number of their colleagues. The combination of these factors has drastically affected the quantity and quality of scientific inquiry.

The prospects for Lebanese research are, of course, inexorably linked with the future of the country (cf. Saigh, 1989b). Should the current state of unrest prevail, it is anticipated that research productivity will be virtually moribund. On the other hand, it is anticipated that a political settlement should lead to an economic recovery inasmuch as Lebanon has virtually no foreign debt and one of the largest gold reserves in the world. Economic and political stability would, over time, lead to the restaffing of university faculties, and the combination of these developments would serve to facilitate research productivity. Unfortunately, the Byzantine nature of Lebanese poli-

tics makes it difficult to predict which scenario will prevail. It is apparent, however, that the more positive prospectus will not prevail until the well-being of the country is placed above international and confessional self-interests.

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